

What is Claimed is:

1. A substrate suitable for use in an assay comprising:
  - (a) a material for supporting an indicating agent;
  - 5 (b) an indicating agent capable of generating a detectable signal; and
  - (c) a protective coating comprised principally of a protective coating forming material at least substantially transparent to the detectable signal generated by the indicating agent.
- 10 2. The substrate of claim 1 wherein said protective coating is applied as a composition containing the protective forming material and a delivery system capable of delivering the protective coating forming material to the substrate and evaporating therefrom to leave said protective coating.
- 15 3. The substrate of claim 1 wherein the protective coating forming material comprises an acrylic polymer resin.
4. The substrate of claim 2 wherein the acrylic polymer resin is a copolymer of methyl acrylate and ethyl methacrylate.
- 20 5. The substrate of claim 1 wherein the protective coating hermetically seals the indicating agent without producing an adverse amount of nonspecific signal generation.

6. The substrate of claim 2 wherein the delivery system comprises at least one evaporable solvent.

7. The substrate of claim 6 wherein the at least one evaporable solvent is selected  
5 from the group consisting of water, alcohols, toluene, xylene, heptane, butanol, n-butyl acetate, methyl amyl ketone, ethyl benzene, ethylene glycol butylether, ethyl-3-ethoxypropionate, isopropyl alcohol, ethanol, methoxypropanol, acetone and combinations thereof.

10 8. The substrate of claim 7 wherein the at least one evaporable solvent is selected from the group consisting of toluene, acetone, ethyl-3-ethoxypropionate and combinations thereof.

9. The substrate of claim 2 wherein the delivery system further comprises a  
15 preserving agent for preventing oxidation and other adverse reaction of the protective coating forming material to enhance the transparency of the resulting protective coating during the evaporation of the delivery system.

10. The substrate of claim 9 wherein the preserving agent is an aromatic naphtha.  
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11. The composition of claim 10 wherein the aromatic naphtha is naphthalene.

12. The composition of claim 1 wherein the protective coating forming material is

present in an amount of from about 1% to 90% by volume based on the total volume of the composition.

13. The substrate of claim 12 wherein the protective coating forming material is  
5 present in an amount of about 9% by volume.

14. The substrate of claim 9 wherein the preserving agent is present in an amount of from about 0.1% to 10% by volume based on the total volume of the composition.

10 15. The substrate of claim 14 wherein the preserving agent is present in an amount of 0.52% by volume based on the total volume of the composition.

16. The substrate of claim 2 wherein the composition is in the form selected from the group consisting of a liquid and an aerosol.

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17. A composition for forming a protective coating over the surface of an assay substrate having an indicating agent capable of generating a detectable signal associated therewith, comprising a protective coating forming material, and a delivery system for delivering the protective coating forming material in an amount sufficient to  
20 coat the surface of the assay substrate, wherein the delivery system evaporates from the surface of the assay substrate to form a protective coating at least substantially composed of the protective coating forming material that is at least substantially transparent to the detectable signal generated by the indicating agent.

18. The composition of claim 17 wherein the protective coating forming material comprises an acrylic polymer resin.

5 19. The composition of claim 18 wherein the acrylic polymer resin is a copolymer of methyl acrylate and ethyl methacrylate.

20. A method for forming a substantially transparent protective coating over the surface of an assay substrate having an indicating agent capable of generating a  
10 detectable signal associated therewith, said method comprising the steps of:

applying to the surface of the assay substrate an effective amount of the composition of claim 17 sufficient to form the protective coating and seal the indicating agent from the ambient atmosphere; and

drying said composition to remove the delivery system to yield the substantially  
15 transparent protective coating.

21. The method of claim 20 further comprising polishing the protective coating to enhance the transparent qualities of the protective coating.

20 22. The method of claim 20 wherein the applying step further comprises:  
dipping the assay substrate in the composition of claim 17 for a sufficient time to allow the composition to adhere to the surface of the assay substrate; and  
withdrawing the assay substrate from the composition.

23. The method of claim 22 wherein the assay substrate is dipped from about 5 seconds to 10 seconds.

5 24. The method of claim 20 wherein the applying step further comprises:  
pipetting the composition of claim 17 in an amount sufficient to coat the surface  
of the assay substrate associated with the indicating agent; and  
rocking the assay substrate from side to side for a sufficient time to evenly  
distribute the composition thereacross and form the protective coating.

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25. The method of claim 20 wherein the applying step further comprises:  
spraying the composition of claim 17 in an amount sufficient to coat the surface  
of the assay substrate associated with the indicating agent; and  
rocking the assay substrate from side to side for a sufficient time to evenly  
15 distribute the composition thereacross and form the protective coating.

26. The method of claim 21 wherein the polishing step further comprises:  
preparing a polishing solution consisting of a solvent;  
suspending the assay substrate in the polishing solution for a sufficient time to  
20 remove a layer portion of the protective coating;  
withdrawing the assay substrate from the polishing solution;  
shaking off any excess polishing solution from the assay substrate;

drying the assay substrate; and  
if necessary, repeating the above steps.

27. The method of claim 26 wherein the solvent is selected from the group consisting  
5 of toluene, acetone and mixtures thereof.

28. The method of claim 27 wherein the solvent is a mixture containing acetone and  
toluene in a volumetric ratio of from about 1:2 to 1:3.